

(5.5) Solving Problems Using Quadratic Relations

1. Convert to standard form:

a) $y = -(x+4)^2 + 10$ (h,k) $(-4,10)$
 $a = -1$
 $y = -(x+4)(x+4) + 10$
 $y = -(x^2 + 4x + 4x + 16) + 10$ Standard Form
 $y = -(x^2 + 8x + 16) + 10$ $h = -4$
 $y = -x^2 - 8x - 16 + 10$ $k = -10$
 $y = -x^2 - 8x - 6$

b) $y = 3(x-5)^2 - 7$ (h,k) $(5,-7)$
 $a = +3$
 $y = 3(x-5)(x-5) - 7$
 $y = 3(x^2 - 10x + 25) - 7$
 $y = 3x^2 - 30x + 75 - 7$
 $y = 3x^2 - 30x + 68$

May 1-7:55 PM


2. Find the equation, in vertex form, if the zeros are -2 and 10 and the y-intercept is 5. $(0,5)$

$y = a(x-s)(x-r)$ $5 = a(-2)(10)$ x, y
 $5 = a(x+2)(x-10)$ $5 = a(-20)$
 $5 = a(0+2)(0-10)$ $5 = -20a$
 $\frac{5}{-20} = a$ $\frac{-1}{4}$
 For vertex form we need: $\frac{-b}{2a}$ $y = \frac{-1}{4}(x+2)(x-10)$

When we have the zeros, we start with factored form.

$\frac{-b}{2a} = \frac{-2+10}{2} = \frac{8}{2} = 4$ x vertex
 $y = \frac{-1}{4}(x+2)(x-10)$ (h,k)
 $y = \frac{-1}{4}(4+2)(4-10)$ $(4,9)$
 $y = \frac{-1}{4}(6)(-6)$ $y = a(x-h)^2 + k$
 $h = \frac{-1}{4}(-36)$ $y = +\frac{9}{4}$ $b = \frac{-1}{4}(x-4)^2 + 9$

May 1-8:14 PM



Homework/Classwork:
Pg. 293 # 4 to 6 ac, 7, 9-10 ac, 15, 16

May 1-8:19 PM